ASSESSEMENT PROTOCOLS

2021-2023

IN COMMON SPORT +: Fit, Food and Fun for Elderly!

Versión 1

INDEX

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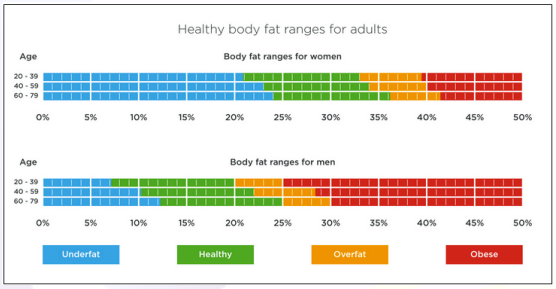
1. PROTOCOL

1. BODY COMPOSITION (TANITA)			
Assessment parameter	Body Composition	Performance	Individual
Purpose	To assess body weight (kg), percentage of body fat – whole body; right and left arm and leg (%), muscle mass – whole body; right and left arm and leg (kg), total bone mass (kg), total body water (%) and visceral fat level (Arbitrary Units) and calculate Body Mass Index (kg/m^2), Physique Rating (Arbitrary Units) basal metabolic rate (kcal) and metabolic age (years).		
Equipment required	▪ Scale – Tanita BC-545N.		
Procedure			
▪ Before the assessment, the evaluators must set manually: birthday date; select female or male; and specify height in the system. ▪ All participants must dress light clothing and stood barefoot (without socks) and looking forward to maintaining the head in a neutral position. ▪ During the assessment, participants must stand in the weighing platform without bending their knees, ensure that the feet contact all electrodes, the arms are fully extended, the elbows do not touch the body and ensuring that all fingers contact the electrodes. ▪ Ensure that do not pull the hand-electrodes beyond the red band. ▪ Do not step off until the unit beeps twice.			
Pre-test/Warm-up	For most accurate results, in the day before testing, evaluators must instruct participants to: 1. Do not eat for 2 hours before testing. 2. Do not exercise for 12 hours before testing. 3. Do not consume alcohol for 24 hours before testing. 4. Do not drink caffeine on the day of testing. 5. Do not use metals, particularly in the fingers. 6. People with pacemakers should not use Bioelectrical Impedance for body composition analysis.		
Risk zone	Near the scale ensure a place to safely place the personal items and clothes with a chair if necessary, to step up to the scale and/or help put on and take off the shoes.		
Graphic representation/ Photography	 *Figure 1 - Body fat ranges for adults (women and men) adapted from https://tanita.eu/help-guides*		

1. BODY COMPOSITION (TANITA)

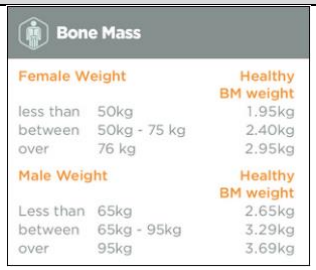


Figure 2 - Bone mass for adults according to body weight (women and men) adapted from https://tanita.eu/help-guides

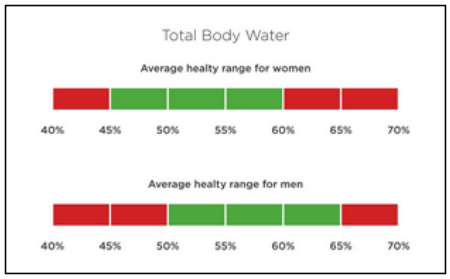


Figure 3 - Total Body Water for adults (women and men) adapted from https://tanita.eu/help-guides

Figure 4 - Visceral fat ranges adapted from https://tanita.eu/help-guides

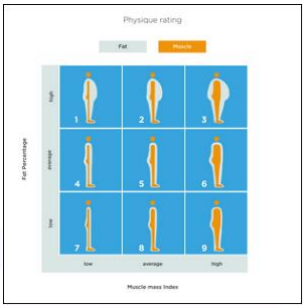
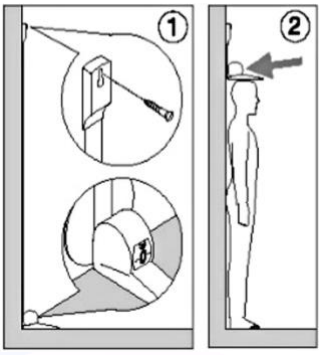


Figure 5 - Physique Rating values adapted from https://tanita.eu/help-guides

Scoring	When the participant steps off the scale register all parameters in the specific spreadsheets.
Normative value	**Body Mass Index** • according to Word Health Organization for nutritional status Below 18.5 kg/m^2 – Underweight; 18.5–24.9 kg/m^2 - Normal weight; 25.0–29.9 kg/m^2 Pre-obesity; 30.0–34.9 kg/m^2 - Obesity class I; 35.0–39.9 kg/m^2 - Obesity class II; Above 40 kg/m^2 - Obesity class III. • according to mortality status for elderly Winter et al (2014)

1. BODY COMPOSITION (TANITA)	
	Below 23.0 kg/m^2 - Underweight; 23–30 kg/m^2 Normal weight; more than 30.0 kg/m^2 Overweight. Lower rates of mortality: 27-27.9 kg/m^2 Increased risk of mortality: 37-37.9 kg/m^2 Increased risk of mortality: below 20.0 kg/m^2 **All Body percentage of Body Fat** • The cut-off values are different for women and men. Please see Figure 1. **All Body Muscle Mass** • Includes the skeletal muscles, smooth muscles such as cardiac and digestive muscles and the water contained in these muscles. • Considering Bioelectrical Impedance absolute muscle mass divided by height squared, we can consider that: Women – Severe sarcopenia ≤5.75 kg/m^2; Moderate sarcopenia 5.76–6.75 kg/m^2; Normal muscle ≥6.76 kg/m^2. Men - Severe sarcopenia ≤8.50 kg/m^2; Moderate sarcopenia 8.51–10.75 kg/m^2; Normal muscle ≥10.76 kg/m^2. **Total Bone Mass** • The cut-off values are different for women and men following body weight. Please see Figure 2 **Total Body Water** • The average Total Body Water percentage range for a healthy person between 45 to 60% in women and 50 to 65% in men Please see Figure 3. **Visceral Fat** • 1 and 12 indicate that you have a healthy level of visceral fat. Please see Figure 4. **Basal Metabolic Rate** • The number of calories required to keep your body function while in rest. There are no reference values but is an indirect indicator of minimum intake calories to the body function effectively. **Metabolic Age** • Is calculated by comparing actual Basal Metabolic Rate to the average of the chronological age group. If the metabolic age is higher than the actual age, is an indicator that actual Basal Metabolic Rate is lower than expected, considering the average chronological age group. **Physique Rating** • provide the balance of body fat and muscle mass, representing an insight into body type. Please see Figure 5.
Comments	Avoid placing the scale on an irregular floor.

1. BODY COMPOSITION (TANITA)	
Variants/similar test	
▪ Not applicable	
References	*Bibliographic:* ▪ *https://tanita.eu/media/wysiwyg/manuals/home-use-body-composition-monitors/bc-545n-instruction-manual.pdf* ▪ https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi ▪ Winter, J. E., MacInnis, R. J., Wattanapenpaiboon, N., & Nowson, C. A. (2014). BMI and all-cause mortality in older adults: a meta-analysis. The American journal of clinical nutrition, 99(4), 875–890. https://doi.org/10.3945/ajcn.113.068122. ▪ Spahillari, A., Mukamal, K. J., DeFilippi, C., Kizer, J. R., Gottdiener, J. S., Djoussé, L., Lyles, M. F., Bartz, T. M., Murthy, V. L., & Shah, R. V. (2016). The association of lean and fat mass with all-cause mortality in older adults: The Cardiovascular Health Study. *Nutrition, metabolism, and cardiovascular diseases: NMCD*, *26*(11), 1039–1047. https://doi.org/10.1016/j.numecd.2016.06.011 ▪ Cruz-Jentoft, A. J., Baeyens, J. P., Bauer, J. M., Boirie, Y., Cederholm, T., Landi, F., Martin, F. C., Michel, J. P., Rolland, Y., Schneider, S. M., Topinková, E., Vandewoude, M., Zamboni, M., & European Working Group on Sarcopenia in Older People (2010). Sarcopenia: European consensus on definition and diagnosis: Report of the European Working Group on Sarcopenia in Older People. *Age and ageing*, *39*(4), 412–423. https://doi.org/10.1093/ageing/afq034 *Audiovisual:* https://www.youtube.com/watch?v=DtRvKWNAVRg

2. HEIGHT			
Assessment parameter	Antropometric parametre	Performance	Individual
Purpose	To measure subject height		
Equipment required	▪ Stadiometer Tanita r or stadiometer tape.		
Procedure			
▪ Stand on top of Tanita without shoes. The standing barefoot, with his back turned to the instrument, with the body weight distributed in stand evenly on both feet, heels and knees together. The balls of the feet slightly apart at an angle of 60º. The back stretched and the arms at the sides, relaxed. The head, shoulder blades, buttocks and heels in contact with the vertical plane instrument (four points of contact). The horizontality of the Frankfort plane (line imaginary inferior orbital edge in the same horizontal plane than the external auditory canal). The upper stop of the instrument was lowered gently flattening the hair and making contact with the vertex of the skull.			
Pre-test/Warm-up	A preliminary trail: Nothing		
Risk zone	The test area must be free of obstacles.		
Graphic representation/ Photography			
Scoring	Centimeters (cm) measured by the evaluated person		
Normative value	**Men:** Not applicable **Women:** Not applicable		
Comments	The test should be terminated if the examined person reports dizziness or pain, etc		
Variantes/similar test			

2. HEIGHT	
• Not applicable	
References	*Bibliographic:* ▪ Lohman, T. G., Roche, A. F., & Martorell, R. (1988). *Anthropometric standardization reference manual* (Vol. 177, pp. 3-8). Champaign: Human kinetics books. ▪ Borba de Amorim, R., Coelho Santa Cruz, M. A., Borges de Souza-Júnior, P. R., Corrêa da Mota, J., & González, C. (2008). Medidas de estimación de la estatura aplicadas al índice de masa corporal (IMC) en la evaluación del estado nutricional de adultos mayores. Revista chilena de nutrición, 35, 272-279. *Audiovisuais:* https://www.youtube.com/watch?v=DH1gS7wUeMk

3. WAIST-HIP INDEX (WHI)			
Assessment parameter	Intra-abdominal fat levels	Performance	Individual
Purpose	To measure intra-abdominal fat levels, relates the waist circumference to that of the hip (in centimeters) and according to the result it is estimated if there is a certain cardiovascular risk.		
Equipment required	▪ Measuring tape		
Procedure			
▪ The waist circumference was measured by taking the midpoint between the last rib and upper border of iliac crest, hip circumference measurement was performed at the most prominent point of the buttocks coinciding with the symphysis pubis. To do this, the subject must stand up, with the glutes relaxed and the feet together.			
Pre-test/Warm-up	A preliminary trail: Nothing		
Risk zone	The test area must be free of obstacles.		
Graphic representation/ Photography			
Scoring	Centimeters (cm) measured by the evaluated person		
Normative value	**Men:** low risk:< 0.91; moderate risk:0.91-0.98; high risk:0.99-1.03; very high risk:>1.03 **Women:** low risk: < 0.76 moderate risk: 0.76-0.83; high risk:0.84-0.90; very high risk: :>0.90		
Comments	The test should be terminated if the examined person reports dizziness, nausea, excessive fatigue, pain.		
Variantes/similar test			
• Not applicable			
Reference	*Bibliographic:* ▪ Sung, R. Y. T., Yu, C. C. W., Choi, K. C., McManus, A., Li, A. M. C., Xu, S. L. Y., ... & Fok, T. F. (2007). Waist circumference and body mass index in Chinese children: cutoff values for predicting cardiovascular risk factors. International journal of obesity, 31(3), 550-558. ▪ González-Jiménez, E., Montero-Alonso, M. Á., & Schmidt-Rio Valle, J. (2013). Estudio de la utilidad del índice de cintura-cadera como		

3. WAIST-HIP INDEX (WHI)	
	predictor del riesgo de hipertensión arterial en niños y adolescentes. Nutrición Hospitalaria, 28(6), 1993-1998. *Audiovisual:* https://www.youtube.com/watch?v=QHd4l02MQRQ

4. HANDGRIP (JAMAR HIDRAULIC)			
Assessment parameter	Isometric strength	Performance	Individual
Purpose	To measure the maximum isometric strength of the hand and forearm muscles.		
Equipment required	▪ Handgrip (Jamar Hidraulic) ▪ 1 Chair		
Procedure			
▪ This the patient is in a comfortable sitting position with their shoulder abducted and neutrally rotated. Angle of the elbow should be kept as close to 90 degrees as possible. The forearm should also be in a neutral position with the wrist between 0 and 30 degrees dorsiflexion while also between 0 and 15 degrees ulnar deviation. Instruct the patient to grip the hand dynamometer with their fingers around the second handle with the readout dial pointing away from their body. The administrator of the test should lightly grip the readout dial in order to prevent and accidental dropping of the device. Once the patient is comfortable instruct them to grip the device as hard as they can for 4-5 seconds and relax. It is best to perform this part of the test 3 times or more to generate an average grip strength reading.			
Pre-test/Warm-up	A preliminary trail: Perform warm-up exercises with your hands		
Risk zone	The test area must be free of obstacles.		
Graphic representation/ Photography			
Scoring	Exert as much force as possible with your right and left hands.		

Normative value

Age group (years)	Handgrip (Mendes, et al., 2017						
	P5	P10	P25	P50	P75	P90	P95
Men							
60-64	-	-	-	-	-	-	-
65-69	-	20.4	27.0	33.5	39.1	43.1	-
70-74	-	20.4	27.0	33.5	39.1	43.1	-
75-79	-	19.6	23.3	28.1	32.1	36.0	-
80-84	-	19.6	23.3	28.1	32.1	36.0	-
85-89	-	16.5	19.5	23.2	27.2	35.2	-
90-94	-	16.5	19.5	23.2	27.2	35.2	-
+94	-	16.5	19.5	23.2	27.2	35.2	-
Women							
60-64	-	-	-	-	-	-	-
65-69	-	13.1	16.7	19.9	23.5	26.4	-
70-74	-	13.1	16.7	19.9	23.5	26.4	-

4. HANDGRIP (JAMAR HIDRAULIC)

75-79	-	10.6	14.2	16.4	19.8	22.4	-
80-84	-	10.6	14.2	16.4	19.8	22.4	-
85-89	-	9.8	12	15.5	17.7	20.2	-
90-94	-	9.8	12	15.5	17.7	20.2	-
+94	-	9.8	12	15.5	17.7	20.2	-

Comments

The test should be terminated if the examined person reports *dizziness, nausea, excessive fatigue, pain*, or if the examiner notices any other symptoms of concern. The examiners should be trained in recognizing these symptoms and the necessary action plan should be in place in case of medical emergencies.

Variantes/similar test

- Roylan Dynamometer: Mathiowetz, V. (2002). Comparison of Rolyan and Jamar dynamometers for measuring grip strength. *Occupational therapy international*, *9*(3), 201-209.
- Pneumatic dynamometer: Shiratori, A. P., Iop, R. D. R., Borges Júnior, N. G., Domenech, S. C., & Gevaerd, M. D. S. (2014). Evaluation protocols of hand grip strength in individuals with rheumatoid arthritis: a systematic review. *Revista brasileira de reumatologia*, *54*(2), 140-147.
- Digital dynamometer: Shiratori, A. P., Iop, R. D. R., Borges Júnior, N. G., Domenech, S. C., & Gevaerd, M. D. S. (2014). Evaluation protocols of hand grip strength in individuals with rheumatoid arthritis: a systematic review. *Revista brasileira de reumatologia*, *54*(2), 140-147.
- Baseline hand dynamometer: Mathiowetz, V., Vizenor, L., & Melander, D. (2000). Comparison of baseline instruments to the Jamar dynamometer and the B&L engineering pinch gauge. *The Occupational Therapy Journal of Research*, *20*(3), 147-162.
- Martin Vigorimeter: Desrosiers, J., Bravo, G., Hebert, R., & Dutil, E. (1995). Normative data for grip strength of elderly men and women. *American Journal of Occupational Therapy*, *49*(7), 637-644.
- Mendes, J., Amaral, T. F., Borges, N., Santos, A., Padrão, P., Moreira, P., ... & Negrão, R. (2017). Handgrip strength values of Portuguese older adults: a population based study. *BMC geriatrics*, *17*(1), 1-12.

Reference

Bibliografics:

- Bechtol, C. O. (1954). Grip test: the use of a dynamometer with adjustable handle spacings. *JBJS*, *36*(4), 820-832.
- Han, S. H., Nam, K. S., Cho, Y. S., & Ryu, K. J. (2011). Normative data on hand grip strength. *J. Nov. Physiother*, *1*(102), 10-4172.

Audiovisual:
https://www.youtube.com/watch?v=frcNPiLnWRo

5. 30 SECONDS CHAIR STAND TEST			
Assessment parameter	Lower limb muscle strength	Performance	Individual
Purpose	To measure the strength of the lower body, being an indicator of physical independence.		
Equipment required	▪ Chair with back, without arms and about 43 to 45 centimetres high. ▪ Stopwatch. ▪ Wall space		
Procedure			
▪ Place the chair against a wall where it will be stable. ▪ Sit the participant in the middle of the chair with feet flat on the floor, shoulder-width apart and back straight. ▪ Ask the participant to cross the arms at the wrist and place them against your chest. ▪ The test starts when the evaluator tells: "3, 2, 1 GO!" ▪ On the word "GO" the evaluator will time 30 seconds, using the stopwatch. ▪ The participant must rise to a full stand and sit again as many times as we can during the 30-second interval. ▪ The evaluator registers the number of times of complete rise and sit. i. Each time the participant stands during the test make sure that is a full stand. ii. When the participants sit, make sure that sits down and do not just touch the backside of the chair. It must be a full sit between each stand. iii. Participant must do not push off the thighs, or the seat of the chair with the help of the hands to stand unless they needed to avoid falling. If participants use their arms to complete the test they scored zero. iv. Participant must keep arms against the chest crossed and do not allow the arms to swing up when rising. v. If the participants are on the way up to stand when time is called, the credit will be given for that stand. vi. incorrectly executed stands are not counted.			
Pre-test/Warm-up	1. Demonstrate the task both slowly and quickly. 2. Let participant practice a repetition or two before completing the test.		
Risk zone	▪ Guarantee that the chair is placed against a wall and have enough around free space to perform the test. ▪ The evaluator or other person must be near the participant in case we lose balance. ▪ Allow participants to stop and rest if they feel tired or unable to perform more repetition. The time keeps going.		

5. 30 SECONDS CHAIR STAND TEST

Graphic representation/ Photography

https://sielearning.tafensw.edu.au/toolboxes/Toolbox805/fit_tb/fit011_1_lr10/fit011_1_lr10_1_1.htm

Scoring

The number of full stands that can be completed in **30 seconds** with **arms folded across chest**.

Normative value

Age group (years)	30 Seconds Chair Stand Test (Marques et al., 2014)						
	P5	P10	P25	P50	P75	P90	P95
Men							
60-64	-	-	-	-	-	-	-
65-69	-	11	13	**16**	19	23	-
70-74	-	9	12	**15**	17	20	-
75-79	-	6	10	**13**	16	19	-
80-84	-	5	8	**12**	15	17	-
85-89	-	3	7	**11**	14	17	-
90-94	-	-	-	-	-	-	-
+94	-	-	-	-	-	-	-
Women							
60-64							
65-69	-	9	12	**15**	18	21	-
70-74	-	9	12	**15**	18	21	-
75-79	-	6	9	**13**	16	18	-
80-84	-	3	6	**10**	13	16	-
85-89	-	2	5	**9**	12	16	-
90-94	-	-	-	-	-	-	-
+94	-	-	-	-	-	-	-

Comments

- Do not forget to clearly explain the procedures to all participants.
- If the participant used their hands to push off to stand, that attempt does not count, that repetition as a "Per Protocol" stand. Only stands that are done without any assistance by pushing off the seat, off the thighs or with any other assistive devices such as a walker or cane are counted as "Per Protocol" stands.
- If the participant is unable to perform any stands per the protocol, let the individual do the test by pushing off their legs or the chair, or using their walker, but the test will then be scored as "Did Not Follow Protocol."
- Only "Per Protocol" scores are recorded in the overall group outcomes reports. Both "Per Protocol" scores and "Did Not Follow Protocol" scores are recorded.

Variants/similar test

5. 30 SECONDS CHAIR STAND TEST

- **Five times sit to stand.** Goldberg, A., Chavis, M., Watkins, J., & Wilson, T. (2012). The five-times-sit-to-stand test: validity, reliability and detectable change in older females. *Aging clinical and experimental research*, *24*(4), 339–344. https://doi.org/10.1007/BF03325265
- **Ten times sit to stand.** Takai, Y., Ohta, M., Akagi, R., Kanehisa, H., Kawakami, Y., & Fukunaga, T. (2009). Sit-to-stand test to evaluate knee extensor muscle size and strength in the elderly: a novel approach. *Journal of physiological anthropology*, *28*(3), 123–128. https://doi.org/10.2114/jpa2.28.123
- **Modified 30 seconds sit to stand test.** McAllister, L. S., & Palombaro, K. M. (2020). Modified 30-Second Sit-to-Stand Test: Reliability and Validity in Older Adults Unable to Complete Traditional Sit-to-Stand Testing. *Journal of geriatric physical therapy (2001)*, *43*(3), 153–158. https://doi.org/10.1519/JPT.0000000000000227

References

Bibliographic:

- Jones, C. J., Rikli, R. E., & Beam, W. C. (1999). A 30-s chair-stand test as a measure of lower body strength in community-residing older adults. *Research quarterly for exercise and sport*, *70*(2), 113–119. https://doi.org/10.1080/02701367.1999.10608028
- Rikli, R. E., & Jones, C. J. (2013). Development and validation of criterion-referenced clinically relevant fitness standards for maintaining physical independence in later years. *The Gerontologist*, *53*(2), 255–267. https://doi.org/10.1093/geront/gns071
- Rikli, R. E. & Jones, C. J. (1999). Development and Validation of a Functional Fitness Test for Community-Residing Older Adults, *Journal of Aging and Physical Activity,* 7(2), 129-161.
- McCarthy, E. K., Horvat, M. A., Holtsberg, P. A., & Wisenbaker, J. M. (2004). Repeated chair stands as a measure of lower limb strength in sexagenarian women. *The journals of gerontology. Series A, Biological sciences and medical sciences*, *59*(11), 1207–1212. https://doi.org/10.1093/gerona/59.11.1207
- Sardinha, L. B., Santos, D. A., Marques, E. A., & Mota, J. (2015). Criterion-referenced fitness standards for predicting physical independence into later life. *Experimental gerontology*, *61*, 142–146. https://doi.org/10.1016/j.exger.2014.12.012
- Marques, E. A., Baptista, F., Santos, R., Vale, S., Santos, D. A., Silva, A. M., Mota, J., & Sardinha, L. B. (2014). Normative functional fitness standards and trends of Portuguese older adults: cross-cultural comparisons. *Journal of aging and physical activity*, *22*(1), 126–137. https://doi.org/10.1123/japa.2012-0203

Audiovisual:

https://www.youtube.com/watch?v=PzCTwkJVhWg

6. ARM CURLS IN 30 SECONDS TEST

Assessment parameter	Upper body strength	Performance	Individual
Purpose	To do as many arm curls as possible in 30 seconds.		
Equipment required	▪ Hand weight 2.27 kg ▪ Hand weight 3.63 kg ▪ Stopwatch. ▪ Chair without armrests		

Procedure

- This test is conducted on the dominant arm side (or stronger side). The subject sits on the chair, holding the weight in the hand using a suitcase grip (palm facing towards the body) with the arm in a vertically down position beside the chair. Brace the upper arm against the body so that only the lower arm is moving. Curl the arm up through a full range of motion, gradually turning the palm up (flexion with supination). As the arm is lowered through the full range of motion, gradually return to the starting position. The arm must be fully bent and then fully straightened at the elbow.

Pre-test/Warm-up	A preliminary trail: 10-15 repetitions at low intensity
Risk zone	There must be sufficient space in the test area and it must be free of obstacles.
Graphic representation/ Photography	 *https://sites.google.com/site/cfspersonasmayores/evaluacion-de-la-condicion-fisica/arm-curl-test*
Scoring	Record the total number of bicep curls that can be completed in 30 seconds holding a hand weight of (2.27 kg) for women; 3.63 kg for men.
Normative value	

Age group (years)	Arm Curls in 30 Seconds Test (Marques et al., 2014)						
	P5	P10	P25	P50	P75	P90	P95
Men							
60-64	-	-	-	-	-	-	-
65-69	-	12	16	**19**	23	26	-
70-74	-	11	14	**18**	22	25	-
75-79	-	9	9	**16**	20	23	-
80-84	-	7	7	**14**	18	22	-
85-89	-	6	6	**13**	17	21	-
90-94	-	-	-	-	-	-	-
+94	-	-	-	-	-	-	-
Women							
60-64	-						
65-69	-	11	14	**18**	21	25	-
70-74	-	11	14	**17**	21	24	-
75-79	-	8	11	**15**	19	22	-

6. ARM CURLS IN 30 SECONDS TEST

80-84	-	5	9	**12**	16	20	-
85-89	-	4	7	**11**	15	19	-
90-94	-	-	-	-	-	-	-
+94	-	-	-	-	-	-	-

Comments	The test should be terminated if the examined person reports *dizziness, nausea, excessive fatigue, pain*, or if the examiner notices any other symptoms of concern. The examiners should be trained in recognizing these symptoms and the necessary action plan should be in place in case of medical emergencies.

Variantes/similar test

- Not applicable

Referencias

Bibliographic:

- Rikli, R. E., & Jones, C. J. (1999). Development and validation of a functional fitness test for community-residing older adults. *Journal of aging and physical activity*, *7*(2), 129-161.
- Jones, C. J., & Rikli, R. E. (2002). Measuring functional. *The Journal on active aging*, *1*(24-30).
- Różańska-Kirschke, A., Kocur, P., Wilk, M., & Dylewicz, P. (2006). The Fullerton Fitness Test as an index of fitness in the elderly. *Medical Rehabilitation*, *10*(2), 9-16.

Audiovisual:

https://www.youtube.com/watch?v=ifSLtd_20ww

7. TWO MINUTE STEP

Assessment parameter	Aerobic endurance.	Performance	Individual
Purpose	Record the total number of steps completed in 2 minutes by raising each knee to a point midway between the patella (kneecap) and the iliac crest (upper hip bone).		
Equipment required	▪ Tape for marking the wall. ▪ Stopwatch. ▪ Wall		

Procedure

- The subject stands up straight next to the wall while a mark is placed on the wall at the level corresponding to midway between the patella (knee cap) and illiac crest (top of the hip bone). The subject then marches in place for two minutes, lifting the knees to the height of the mark on the wall.

Pre-test/Warm-up	A preliminary trail: Take 15-20 steps at a low intensity
Risk zone	There must be sufficient space in the test area and it must be free of obstacles.
Graphic representation/ Photography	 *https://www.pacelinebikes.com/blog/riding-after-60*
Scoring	Record the total number of times the right knee reaches the tape level in two minutes.

Normative value

Age group (years)	Two Minute Step Test						
	P5	P10	P25	P50	P75	P90	P95
Men							
60-64	-	-	-	101	-	-	-
65-69	-	-	-	101	-	-	-
70-74	-	-	-	95	-	-	-
75-79	-	-	-	91	-	-	-
80-84	-	-	-	87	-	-	-
85-89	-	-	-	75	-	-	-
90-94	-	-	-	69	-	-	-
+94	-	-	-	-	-	-	-
Women							
60-64	-	-	-	91	-	-	-
65-69	-	-	-	90	-	-	-
70-74	-	-	-	84	-	-	-
75-79	-	-	-	84	-	-	-
80-84	-	-	-	75	-	-	-
85-89	-	-	-	70	-	-	-
90-94	-	-	-	58	-	-	-

7. TWO MINUTE STEP	
	+94 | - | - | - | - | - | - | -
Comments	The test should be terminated if the examined person reports *dizziness, nausea, excessive fatigue, pain*, or if the examiner notices any other symptoms of concern. The examiners should be trained in recognizing these symptoms and the necessary action plan should be in place in case of medical emergencies.
Variantes/similar test	
▪ **6-minute step test (6MST / SMST):** Arcuri, J. F., Borghi-Silva, A., Labadessa, I. G., Sentanin, A. C., Candolo, C., & Di Lorenzo, V. A. P. (2016). Validity and reliability of the 6-minute step test in healthy individuals: a cross-sectional study. *Clinical Journal of Sport Medicine*, *26*(1), 69-75. ▪ **3-minute step test (TMST):** Bohannon, R. W., Bubela, D. J., Wang, Y. C., Magasi, S. S., & Gershon, R. C. (2015). Six-minute walk test versus three-minute step test for measuring functional endurance (Alternative Measures of Functional Endurance). *Journal of strength and conditioning research/National Strength & Conditioning Association*, *29*(11), 3240.	
Referencias	*Bibliographic:* ▪ Rikli, R. E., & Jones, C. J. (1999). Development and validation of a functional fitness test for community-residing older adults. *Journal of aging and physical activity*, *7*(2), 129-161. ▪ Jones, C. J., & Rikli, R. E. (2002). Measuring functional. *The Journal on active aging*, *1*(24-30). ▪ Różańska-Kirschke, A., Kocur, P., Wilk, M., & Dylewicz, P. (2006). The Fullerton Fitness Test as an index of fitness in the elderly. *Medical Rehabilitation*, *10*(2), 9-16. ▪ Bohannon, R. W., & Crouch, R. H. (2019). Two-minute step test of exercise capacity: systematic review of procedures, performance, and clinimetric properties. *Journal of Geriatric Physical Therapy*, *42*(2), 105-112. *Audiovisual:* https://www.youtube.com/watch?v=01GRw-MwwYc&t=5s

8. CHAIR SIT-AND-REACH			
Assessment parameter	Lower body flexibility	Performance	Individual
Purpose	To assess lower-body flexibility specifically hamstrings flexibility.		
Equipment required	▪ Chair with back, without arms and about 43 to 45 centimetres high. ▪ Ruler tape.		
Procedure			
▪ Place the chair against a wall where it will be stable. ▪ Slide forward in the chair until being able to straighten one leg. ▪ The ankle of the straight leg should be flexed at about a 90-degree angle and the other foot should be flat on the floor. ▪ One hand should be placed directly on top of the other with the fingers extended. ▪ The participants should exhale as bending forward at the hip and try to reach the toes. If the extended leg begins to bend, the participant should move back in the chair until the leg is straight. ▪ The position must be maintained for at least 2 seconds and without bounce or jerk as reach. ▪ Before testing each participant has to take two practice reaches on each leg to determine which side is more flexible. The measure and record must be made only on the most flexible side ▪ After participant completed the practice reaches, the test begins considering the center of the toe of the shoe has a measurement of "0" centimetres. ▪ When reaching forward toward the toes, the observer must mark the score to the nearest centimetre. ▪ If the participant reach passes the shoe past this "0" point at the middle toe, receive a positive score of as many inches as you reach past it, measured to the nearest centimetre. ▪ If the participant cannot reach the toes, receive a negative score of as many centimetres as short of the "0" point at the middle of the toe of the shoe, measured to the nearest centimetre. ▪ Each participant can repeat the test twice and record the better of the two measurements.			
Pre-test/Warm-up	1. Slowly demonstrate the position explaining that the position must be maintained for at least 2 seconds and without bounce or jerk as reach. 2. Let participant practice before testing, taking two practices reaches on each leg to determine which side is more flexible. <u>The measure and record must be made only on the most flexible side</u>. 3. Record which leg was used for measurement.		
Risk zone	▪ Before testing ensure that the chair will not tip forward as the participant reach for the toes. ▪ Ensure that there is enough around free space to perform the test. ▪ Ensure the participant does not bounce forward.		

8. CHAIR SIT-AND-REACH

Graphic representation/ Photography

https://sielearning.tafensw.edu.au/toolboxes/Toolbox805/fit_tb/fit011_1_lr10/fit011_1_lr10_1_5.htm

Scoring

The score is recorded to the cm as the distance reached, either a negative or positive score.

Normative value

Age group (years)	Chair Sit-and- Reach Test (Marques et al., 2014)						
	P5	P10	P25	P50	P75	P90	P95
Men							
60-64	-	-	-	-	-	-	-
65-69	-	-22	-15	**-6**	0	3.5	-
70-74	-	-24	-15	**-8.5**	0	2.7	-
75-79	-	-28.9	-20	**-9**	-1	1.9	-
80-84	-	-30	-21	**-14**	-5.5	-1	-
85-89	-	-32.4	-23.5	**-15**	-8	-2.6	-
90-94	-	-	-	**-**	-	-	-
+94	-	-	-	**-**	-	-	-
Women							
60-64	**-**						
65-69	**-**	-18	-10	**0**	2	6	-
70-74	**-**	-16	-9	**-1**	1	4	-
75-79	-	-20	-11	**-2**	1	3	-
80-84	-	-30	-20	**-10**	-4	1.2	**-**
85-89	-	-30	-20	**-13**	-7	-2.3	**-**
90-94	-	-	-	**-**	-	-	-
+94	-	-	-	**-**	-	-	-

Comments

- Do not forget to clearly explain the procedures to all participants.
- This test should be scored as "Followed Protocol" for all trials taken as there are no modifications for this test.

Variants/similar test

- **Sit and reach test.** Mayorga-Vega, D., Merino-Marban, R., & Viciana, J. (2014). Criterion-Related Validity of Sit-and-Reach Tests for Estimating Hamstring and Lumbar Extensibility: a Meta-Analysis. *Journal of sports science & medicine*, *13*(1), 1–14.
- **Modified sit and reach test.** Holt, L. E., Pelham, T. W., & Burke, D. G. (1999). Modifications to the Standard Sit-and-Reach Flexibility Protocol. *Journal of athletic training*, *34*(1), 43–47.

References

Bibliographic:

8. CHAIR SIT-AND-REACH	
	▪ Rikli, R. E., & Jones, C. J. (2013). Development and validation of criterion-referenced clinically relevant fitness standards for maintaining physical independence in later years. *The Gerontologist*, *53*(2), 255–267. https://doi.org/10.1093/geront/gns071 ▪ Rikli, R. E. & Jones, C. J. (1999). Development and Validation of a Functional Fitness Test for Community-Residing Older Adults, *Journal of Aging and Physical Activity,* 7(2), 129-161. ▪ Sardinha, L. B., Santos, D. A., Marques, E. A., & Mota, J. (2015). Criterion-referenced fitness standards for predicting physical independence into later life. *Experimental gerontology*, *61*, 142–146. https://doi.org/10.1016/j.exger.2014.12.012 ▪ Marques, E. A., Baptista, F., Santos, R., Vale, S., Santos, D. A., Silva, A. M., Mota, J., & Sardinha, L. B. (2014). Normative functional fitness standards and trends of Portuguese older adults: cross-cultural comparisons. *Journal of aging and physical activity*, *22*(1), 126–137. https://doi.org/10.1123/japa.2012-0203 *Audiovisual:* https://www.youtube.com/watch?v=cWlWvKP1G-U

9. BACK SCRATCH TEST			
Assessment parameter	Upper body flexibility	Performance	Individual
Purpose	To assess upper limb flexibility or shoulder mobility.		
Equipment required	▪ Ruler tape.		
Procedure			
▪ Ask participants to stand and place the preferred hand over the same shoulder with the palm facing down, fingers extended, reaching down the middle of the back as below as possible. The same side elbow is pointed up. ▪ The other arm with palm facing up, around the back of the waist, reaching up the middle of the back, to touch or overlap the extended middle fingers of both the hands. ▪ Reach up as far as possible, attempting to touch the fingers of the two hands together. Some people are not able to touch at all, while others' fingers may overlap. ▪ Allow two practice stretches with each arm, determining which side is more flexible. You will be measuring and recording only your most flexible side. ▪ After the two experimental trials ask the participant to perform the stretch as outlined above, without shifting hands, maintaining the fingers pointing toward each other. ▪ The distance between the fingertips of one hand and the other is measured to the nearest centimetre. If the fingers overlap, the amount of the overlap will be measured. ▪ Fingertips just touching receive a score of "0". ▪ If the fingers do not touch, receive a negative score of the distance between fingers, measured to the nearest 0.5 or centimetre. ▪ A positive score is received if the fingers overlap. Measure the overlap to the nearest 0.5 centimetres. ▪ If the participant can not put the fingers together, do not let grab and pull, as this will affect the accuracy of the score. ▪ Each participant has two trials, recording the best score, indicating is the score is negative or positive.			
Pre-test/Warm-up	1. Slowly demonstrate the position explaining that the position must be maintained for at least 2 seconds and without grab and pull the fingers if can put the fingers together. 2. Let participant practice before testing, taking two practices reaches on each side to determine which side is more flexible. <u>The measure and record must be made only on the most flexible side</u>. 4. Record which side was used for measurement considering the limb that remains above with the elbow facing up.		
Risk zone	▪ Ensure that there is enough around free space and the participant stands tall. ▪ Ensure the participant do not wear clothes that may interfere with the normal range of motion and once performing the task respect its normal limitations		

9. BACK SCRATCH TEST

Graphic representation/ Photography

https://sielearning.tafensw.edu.au/toolboxes/Toolbox805/fit_tb/fit011_1_lr10/fit011_1_lr10_1_6.htm

Scoring

The score is recorded to the nearest cm as the distance reached, either a negative or positive score.

Normative value

Age group (years)	Back Scratch Test (Marques et al., 2014)						
	P5	P10	P25	P50	P75	P90	P95
Men							
60-64	-	-	-	-	-	-	-
65-69	-	-34	-24.4	**-15**	-7	0	-
70-74	-	-38	-29	**-17**	-9	0	-
75-79	-	-43.6	-32	**-20**	-11	-3	-
80-84	-	-45	-37	**-25**	-13	-6	-
85-89	-	-50	-42	**-28**	-14	-6.2	-
90-94	-	-	-	-	-	-	-
+94	-	-	-	-	-	-	-
Women							
60-64	-						
65-69	-	-24.1	-17	**-10**	-1	2	-
70-74	-	-29	-19	**-11**	-4	1	-
75-79	-	-37	-25	**-15.3**	-7	0.4	-
80-84	-	-45.6	-34	**-21**	-11	-2	-
85-89	-	-45	-33	**-23**	-12	-6	-
90-94	-	-	-	-	-	-	-
+94	-	-	-	-	-	-	-

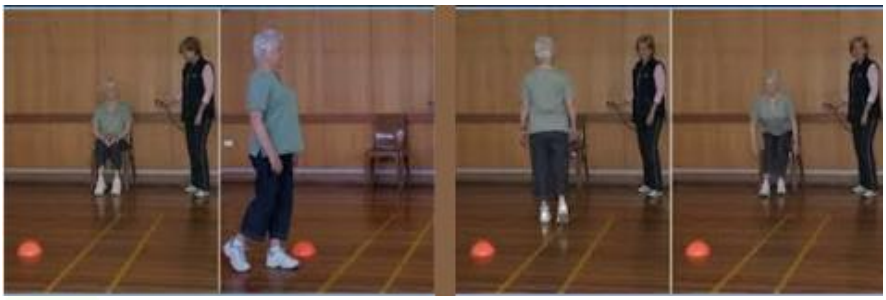
Comments

- Do not forget to clearly explain the procedures to all participants.
- This test should be scored as "Followed Protocol" for all trials taken as there are no modifications.

Variants/similar test

- **Functional Movement Screen - Shoulder Mobility test.** Cook, G., Burton, L., Hoogenboom, B. J., & Voight, M. (2014). Functional movement screening: the use of fundamental movements as an assessment of function-part 2. *International journal of sports physical therapy*, *9*(4), 549–563.

9. BACK SCRATCH TEST	
References	*Bibliographic:* ▪ Rikli, R. E., & Jones, C. J. (2013). Development and validation of criterion-referenced clinically relevant fitness standards for maintaining physical independence in later years. *The Gerontologist*, *53*(2), 255–267. https://doi.org/10.1093/geront/gns071 ▪ Rikli, R. E. & Jones, C. J. (1999). Development and Validation of a Functional Fitness Test for Community-Residing Older Adults, *Journal of Aging and Physical Activity,* 7(2), 129-161. ▪ Sardinha, L. B., Santos, D. A., Marques, E. A., & Mota, J. (2015). Criterion-referenced fitness standards for predicting physical independence into later life. *Experimental gerontology*, *61*, 142–146. https://doi.org/10.1016/j.exger.2014.12.012 ▪ Marques, E. A., Baptista, F., Santos, R., Vale, S., Santos, D. A., Silva, A. M., Mota, J., & Sardinha, L. B. (2014). Normative functional fitness standards and trends of Portuguese older adults: cross-cultural comparisons. *Journal of aging and physical activity*, *22*(1), 126–137. https://doi.org/10.1123/japa.2012-0203 ▪ Jones, C. J., & Rikli, R. E. (2002). Measuring functional fitness of older adults, *The Journal on Active Aging*, 24–30. *Audiovisual:* https://www.youtube.com/watch?v=60hR4F4cjic

10. 8-FOOT UP AND GO TEST			
Assessment parameter	Power, speed, agility, and dynamic balance	Performance	Individual
Purpose	The test consists of getting up from a chair, walking (without running) 2.44 m to and around a cone, and returning to the chair as quickly as possible (and safely) to sit down.		
Equipment required	▪ Measuring/trundle wheel to measure distance covered. ▪ Stopwatch. ▪ Straight back or folding chair (about 44 cm high) ▪ 1 Cone market		
Procedure			
▪ The test area has a distance of 2.44 m. Place the chair next to a wall (for safety) and the cone marker 2,44 m in front of the chair. The subject starts fully seated, hands resting on the knees and feet flat on the ground.			
Pre-test/Warm-up	A preliminary trail: Perform three tests of the test at low intensity		
Risk zone	There must be sufficient space in the test area and it must be free of obstacles.		
Graphic representation/ Photography	 *https://www.pacelinebikes.com/blog/riding-after-60/*		
Scoring	Measure the seconds needed to get up from a sitting position, walk 2.44m, turn and return to the sitting position.		
Normative value			

Age group (years)	**8- Foot Up and Go Test** (Marques et al., 2014)						
	P5	**P10**	**P25**	**P50**	**P75**	**P90**	**P95**
Men							
60-64	-	-	-	-	-	-	-
65-69	-	7.8	6.1	**5.1**	4.4	4	-
70-74	-	12.3	7.5	**5.9**	5	4.3	-
75-79	-	16.4	9.9	**6.9**	5.4	4.9	-
80-84	-	18	12	**8.3**	6.8	5.5	-
85-89	-	22.8	16	**10.1**	7.4	5.9	-
90-94	-	-	-	-	-	-	-
+94	-	-	-	-	-	-	-
Women							
60-64	-	-	-	-	-	-	-

10. 8-FOOT UP AND GO TEST

65-69	-	9.1	6.8	**5.6**	5	4.5	-
70-74	-	11.6	7.2	**6**	5.2	4.7	-
75-79	-	18.3	11.2	**7.3**	5.9	5.1	-
80-84	-	23.4	16.3	**10.6**	7.1	6	-
85-89	-	29	20	**12.6**	8.5	6.4	-
90-94	-	-	-	-	-	-	-
+94	-	-	-	-	-	-	-

Comments

The test should be terminated if the examined person reports dizziness, nausea, excessive fatigue, pain, or if the examiner notices any other symptoms of concern. The examiners should be trained in recognizing these symptoms and the necessary action plan should be in place in case of medical emergencies.

Variantes/similar test

- **Get-up-and-Go" (GUG):** Wall, J. C., Bell, C., Campbell, S., & Davis, J. (2000). The Timed Get-up-and-Go test revisited: measurement of the component tasks. *Journal of rehabilitation research and development*, *37*(1).
- **Timed Get-up-and-Go" (TGUG):** Wall, J. C., Bell, C., Campbell, S., & Davis, J. (2000). The Timed Get-up-and-Go test revisited: measurement of the component tasks. *Journal of rehabilitation research and development*, *37*(1).
- **Timed ´´ Up & Go´´ (TUG):** Podsiadlo, D., & Richardson, S. (1991). The timed "Up & Go": a test of basic functional mobility for frail elderly persons. *Journal of the American geriatrics Society*, *39*(2), 142-148. Greene, B. R., O'Donovan, A., Romero-Ortuno, R., Cogan, L., Scanaill, C. N., & Kenny, R. A. (2010). Quantitative falls risk assessment using the timed up and go test. *IEEE Transactions on Biomedical Engineering*, *57*(12), 2918-2926.

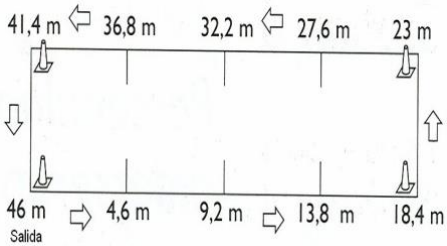
Referencias

Bibliographic:

- Rikli, R. E., & Jones, C. J. (1999). Development and validation of a functional fitness test for community-residing older adults. *Journal of aging and physical activity*, *7*(2), 129-161.
- Rose, D. J., Jones, C. J., & Lucchese, N. (2002). Predicting the probability of falls in community-residing older adults using the 8-foot up-and-go: a new measure of functional mobility. *Journal of Aging and Physical Activity*, *10*(4), 466-475.
- Jones, C. J., & Rikli, R. E. (2002). Measuring functional. *The Journal on active aging*, *1*(24-30).
- Różańska-Kirschke, A., Kocur, P., Wilk, M., & Dylewicz, P. (2006). The Fullerton Fitness Test as an index of fitness in the elderly. *Medical Rehabilitation*, *10*(2), 9-16.

Audiovisual:

https://www.youtube.com/watch?v=U6vo4mq_0Yg

11. 6-MINUTE WALK TEST			
Assessment parameter	Aerobic endurance	Performance	Group
Purpose	To walk as quickly as possible for six minutes to cover as much ground as possible. Subjects are set their own pace and are able to stop for a rest if they desire.		
Equipment required	▪ Measuring/trundle wheel to measure distance covered. ▪ Stopwatch. ▪ Chairs positioned for resting. ▪ 12 Cones.		
Procedure			
▪ The walking route is presented in a rectangular area with a minimum of 30 m perimeter with cones placed at regular intervals (5 m) to indicate the distance traveled.			
Pre-test/Warm-up	A preliminary trail: Perform two laps at a low intensity		
Risk zone	Around the test area, there must be a distance of 2 m perimeter safety distance.		
Graphic representation/ Photography	 https://sites.google.com/site/umbresp/test-adecuados-a-la-tercera-edad/senior-fitness-test-sft  http://www.medicos.cr/web/documentos/EMC%202015/charlasprescripcionii/CAMINATA%20DE%206%20MINUTOS%20Charla%20Colegio%20de%20me%CC%81dicos.pdf		
Scoring	Measure the distance walked in 6 minutes to the nearest meter.		
Normative value			

Age group (years)	6-Minute Walk Test (Marques et al., 2014)						
	P5	P10	P25	P50	P75	P90	P95
Men							
60-64	-	-	-	-	-	-	-
65-69	-	348	489	**568**	640	690	-

11. 6-MINUTE WALK TEST

70-74	-	287	400	**528**	605	660	-
75-79	-	208	300	**455**	568	621	-
80-84	-	150	250	**355**	450	536	-
85-89	-	117	200	**295**	410	504	-
90-94	-	-	-	**-**	-	-	-
+94	-	-	-	**-**	-	-	-
Women							
60-64	**-**	**-**	-	**-**	-	-	**-**
65-69	**-**	300	440	**510**	560	605	-
70-74	**-**	270	395	**480**	535	580	-
75-79	-	173	275	**400**	495	545	-
80-84	-	118	195	**300**	404	500	**-**
85-89	-	89	140	**225**	335	430	**-**
90-94	-	-	-	**-**	-	-	-
+94	-	-	-	**-**	-	-	-

Comments

The test should be terminated if the examined person reports *dizziness, nausea, excessive fatigue, pain*, or if the examiner notices any other symptoms of concern. The examiners should be trained in recognizing these symptoms and the necessary action plan should be in place in case of medical emergencies.

Variantes/similar test

- **12 minutes test:** Kosak M, Smith T. Comparison of the 2, 6, and 12 minute walking tests in patients with stroke [abstract]. J Stroke Cerebrovasc Dis. 2000;9:201.
- **2 minute test :** Chan, W. L., & Pin, T. W. (2019). Reliability, validity and minimal detectable change of 2-minute walk test, 6-minute walk test and 10-meter walk test in frail older adults with dementia. Experimental gerontology, 115, 9-18.
- **10 meter walk test:** Chan, W. L., & Pin, T. W. (2019). Reliability, validity and minimal detectable change of 2-minute walk test, 6-minute walk test and 10-meter walk test in frail older adults with dementia. Experimental gerontology, 115, 9-18.

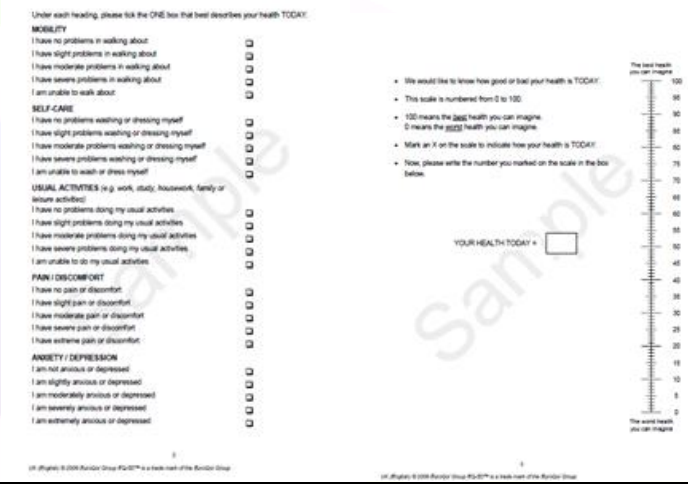
Referencias

Bibliographic:

- Rikli R.E., Jones C.J.: *The reliability and validity of a 6-minute walk test as a measure of physical endurance in older adults*. Journal of Aging and Physical Activity, 1998; 6: 363–375
- Jenkins S, Cecins N, Camarri B, Williams C, Thompson P, Eastwood P. *Regression equations to predict 6 minute walk distance in middle-aged and elderly adults*. Physiotherapy Theory and Practice, 25(7):1-7, 2009

Audiovisual:

https://www.youtube.com/watch?v=n-O8dHyYIF0

12. EQ-5D-5L			
Assessment parameter	Health-related quality of life	Performance	Individual
Purpose	To assess two of the essential components of any measure of health-related quality of life (i) a profile describing the health status in terms of domains or dimensions; and (ii) a numeric value associated with the described health status.		
Equipment required	▪ EQ-5D-5L paper questionnaire. ▪ Pen or pencil for each participant.		
Procedure			
▪ The EQ-5D-5L consists of 2 pages - EQ-5D-5L descriptive system and the EQ Visual Analogue scale (EQ-VAS). ▪ The descriptive system comprises the same 5 dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression). However, each dimension has 5 levels: no problems, slight problems, moderate problems, severe problems, and extreme problems. ▪ The participants are asked to indicate his/her health state by ticking (or placing a cross) in the box against the most appropriate statement in each of the 5 dimensions. ▪ The EQ-VAS records the respondent's self-rated health on a 20 cm vertical, visual analogue scale with endpoints labelled 'the best health you can imagine' and 'the worst health you can imagine. The respondents simply 'mark an X on the scale to indicate how your health is TODAY' and then write the number you marked on the scale in the box below.			
Pre-test/Warm-up	1. Print the questionnaire in sufficient number, according to the number of participants. 2. Ensure that have adequate space (tables and chairs) and the required materials (pen/pencil) for the participants present in each assessment moment. 3. If necessary, help participants to interpret the questions and EQ-VAS.		
Risk zone	▪ The questionnaire is anonymous, however assurance that is correctly codified for further analyses.		
Graphic representation/ Photography			

12. EQ-5D-5L	
Scoring	The participants just have to indicate his/her health state by ticking (or placing a cross) in the box against the most appropriate statement in each of the 5 dimensions and self-rated health on a 20 cm vertical, visual analogue scale.
Normative value	Not applicable.
Comments	▪ Do not forget to clearly explain the procedures to all participants. ▪ Only "Per Protocol" scores are recorded in the overall group outcomes reports.
Variants/similar test	
▪ **EQ-5D.** Devlin, N. J., & Brooks, R. (2017). EQ-5D and the EuroQol Group: Past, Present and Future. *Applied health economics and health policy*, *15*(2), 127–137. https://doi.org/10.1007/s40258-017-0310-5 ▪ **EQ-5D-3L.** Yang, Z., Luo, N., Bonsel, G., Busschbach, J., & Stolk, E. (2018). Selecting Health States for EQ-5D-3L Valuation Studies: Statistical Considerations Matter. *Value in health: the journal of the International Society for Pharmacoeconomics and Outcomes Research*, *21*(4), 456–461. https://doi.org/10.1016/j.jval.2017.09.001	
References	*Bibliographic:* ▪ Herdman, M., Gudex, C., Lloyd, A., Janssen, M., Kind, P., Parkin, D., Bonsel, G., & Badia, X. (2011). Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Quality of life research: an international journal of quality of life aspects of treatment, care and rehabilitation*, *20*(10), 1727–1736. https://doi.org/10.1007/s11136-011-9903-x https://euroqol.org/eq-5d-instruments/eq-5d-5l-about

13. PARTICIPATION MOTIVATION QUESTIONNAIRE OLDER ADULTS

Assessment parameter	Motivation questionnaire	Performance	Individual

Purpose	To assess two of the essential components of any measure of health-related quality of life (i) a profile describing the health status in terms of domains or dimensions; and (ii) a numeric value associated with the described health status.
Equipment required	▪ PMQOA paper questionnaire. ▪ Pen or pencil for each participant.
Procedure	
▪ The Participation Motivation Questionnaire (PMQOA) from Kirkby et al., 1999 is a 30-item list of possible reasons people have to participate in physical activity and sport. ▪ Each item is rated on a three-point Likert scale (not at all important, somewhat important, very important), ▪ Results are considered under a factor analysis of 1) Social, 2) Fitness, 3) Recognition, 4) Challenge/Benefits, 5) Medical, and 6) Involvement friendship	
Pre-test/Warm-up	1. Print the questionnaire in sufficient number, according to the number of participants. 2. Ensure that have adequate space (tables and chairs) and the required materials (pen/pencil) for the participants present in each assessment moment. 3. If necessary, help participants to interpret the questions.
Risk zone	▪ The questionnaire is anonymous, however assurance that is correctly codified for further analyses.
Graphic representation/ Photography	

Item	Total sample ($N = 815$) %	Rank	Men ($n = 399$) %	Rank	Women ($n = 436$) %	Rank
I like to exercise or play sport to keep healthy.	71.3	1	70.3	1	72.2	1
I like to get exercise.	58.6	2	56.3	3	60.6	2
I like the activity.	58.4	3	58.5	2	58.5	4
I want to be physically fit.	55.0	4	53.0	4	56.8	6
I like to exercise/play sport to keep my joints mobile.	54.4	5	48.7	8	59.7	3
I want to improve my fitness.	54.2	6	50.9	6	57.3	5
I like to exercise/play sport for relaxation.	52.3	7	51.1	5	53.5	7
I want to stay in shape.	49.6	8	49.6	7	49.5	9
I like the company.	46.6	9	42.4	10	50.4	8
I like to have fun.	45.7	10	46.3	9	45.3	13
I like to get out of the house.	43.7	11	40.2	11	46.9	10
I want to be with my friends.	42.9	12	38.8	13	46.7	11
I like to have something to do.	41.1	13	36.0	14	45.8	12
I like the social aspects.	40.8	14	39.2	12	42.3	14.5
I want to exercise/play sport for medical reasons.	37.1	15	31.5	16	42.3	14.5
I like to exercise/play sport to assist/prevent back pain.	32.3	16	29.2	18.5	35.1	16
I like the challenge.	32.0	17	35.9	15	28.4	20
I like being part of a group.	29.0	18	25.5	21	32.2	17
I like to do something I'm good at.	28.7	19	29.7	17	27.8	21
I like the rewards.	27.8	20	26.4	20	29.1	19
I like to meet new friends.	26.4	21	23.2	22	29.3	18
I like the excitement.	26.0	22	29.2	18.5	23.1	26
I want to release tension.	24.8	23	22.4	23	27.1	22
My family and friends want me to exercise/play sport.	22.2	24	19.5	24	24.6	23
I like to exercise/play sport to alleviate pain.	21.8	25	18.6	25	24.8	24
I want to learn new things.	20.7	26	17.1	26	24.1	25
I like to feel important.	11.3	27	11.6	27	11.1	27
I want to get rid of energy.	10.1	28.5	10.3	28	9.9	29
I want to be popular.	10.1	28.5	9.5	29	10.6	28
I want to be noticed for what I do.	8.2	30	9.2	30	7.2	30

13. PARTICIPATION MOTIVATION QUESTIONNAIRE OLDER ADULTS	
Scoring	The participants just have to indicate his/her opinion by selecting the adequate scale for each question according to the seven-factor analyses.
Normative value	Not applicable.
Comments	▪ Do not forget to clearly explain the procedures to all participants. ▪ Only "Per Protocol" scores are recorded in the overall group outcomes reports.
Variants/similar test	
▪ **Physical Activity and Leisure Motivation Scale.** Morris T & Rogers H. (2004) Measuring motives for physical activity. In: Sport and Chance of Life: International Sport Science Congress. Seoul, Korea: The Kansas Association for Health, Physical Education, Recreation, and Dance; 242–50. ▪ **Behavioural Regulation in Exercise Questionnaire.** Wilson, P.M., Rodgers, W.M., Loitz, C.C., & Scime, G. (2006). "It's who I am…really!" The importance of integrated regulation in exercise contexts. *Journal of Biobehavioral Research, 11*, 79-104. ▪ **Participation Motivation Questionnaire Older Adults (PMQOA):** Kirkby, R. J., Kolt, G. S., Habel, K., & Adams, J. (1999). Exercise in older women: Motives for participation. *Australian Psychologist*, *34*(2), 122-127.	
References	*Bibliographic:* ▪ Gill D, Gross J & Huddleston S. (1983) Participation motivation in youth sports. Int J Sport Psychol. 1983;14:1–14. ▪ Molanorouzi, K., Khoo, S. & Morris, T. (2015) Motives for adult participation in physical activity: type of activity, age, and gender. *BMC Public Health* 15, 66. https://doi.org/10.1186/s12889-015-1429-7 ▪ Kueh, Y. C., Abdullah, N., Kuan, G., Morris, T., & Naing, N. N. (2018). Testing Measurement and Factor Structure Invariance of the Physical Activity and Leisure Motivation Scale for Youth Across Gender. *Frontiers in psychology*, *9*, 1096. https://doi.org/10.3389/fpsyg.2018.01096 ▪ Kirkby, R. J., Kolt, G. S., Habel, K., & Adams, J. (1999). Exercise in older women: Motives for participation. *Australian Psychologist*, *34*(2), 122-127.

2. SHEET TEST ASSESSMENT PROTOCOL

Assessment date: …. /…./……..

Name of the participant: ……Age: …….Evaluator Initials: ……

1. Anthropometric measurements (TANITA) (BODY COMPOSITION)

Height:_____cm. Weight:_____kg. Fat %:_____. Fat Mass:_____kg.

Muscle Mass:_____kg. Total Body Water:_____%. BMI:_____kg/m^2

Bone Mass:_____kg. Physical Assessment:_____, Basal Metabolic Rate:_____Kcal

Metabolic Age:_____. Visceral Fat Rating:_____

2. Circunferences (Waist and Hip Index)

Waist:_____cm Hip:_____cm WHI:_____

3. Physical condition

Dominant hand ☐Right (1) ☐Left (2)

3.1. Handgrip

Right 1ª_____kg Left 1ª_____kg
Right 2ª_____kg Left 2ª_____ kg

4. Chair Stand Test (30s)

Nº repts:_____

5. Arm curl (30s)

Nº bíceps curl:____rept.

6. Two Minute step

Repetitions:___. (1 min) Repetitions:_____. (2 min)

7. Chair sit-and-reach

Distance:_____cm. Distance:_____cm.

8. Back scratch

Distance:_____cm. Distance:_____cm.

9. Eight-Foot up & go

Time:_____s.

10. Six Minute Walk

Distance walked:_____m.

11. EQ-5D-5L

MOBILITY

I have no problems in walking about ☐
I have slight problems in walking about ☐
I have moderate problems in walking about ☐
I have severe problems in walking about ☐
I am unable to walk about ☐

SELF-CARE

I have no problems washing or dressing myself ☐
I have slight problems washing or dressing myself ☐
I have moderate problems washing or dressing myself ☐
I have severe problems washing or dressing myself ☐
I am unable to wash or dress myself ☐

USUAL ACTIVITIES *(e.g. work, study, housework, family or leisure activities)*

I have no problems doing my usual activities ☐
I have slight problems doing my usual activities ☐
I have moderate problems doing my usual activities ☐
I have severe problems doing my usual activities ☐
I am unable to do my usual activities ☐

PAIN / DISCOMFORT

I have no pain or discomfort ☐
I have slight pain or discomfort ☐
I have moderate pain or discomfort ☐
I have severe pain or discomfort ☐
I have extreme pain or discomfort ☐

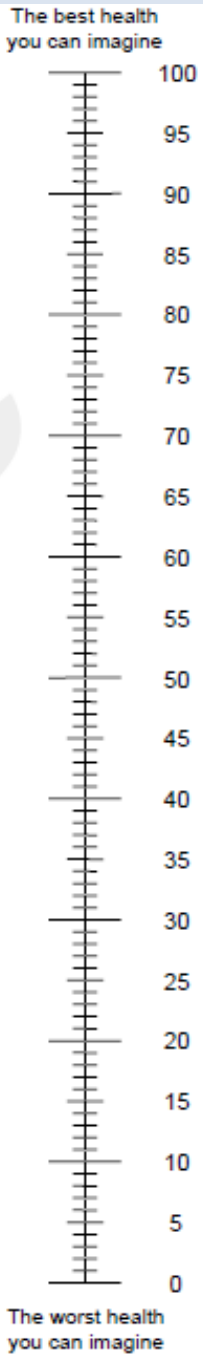
ANXIETY / DEPRESSION

I am not anxious or depressed ☐
I am slightly anxious or depressed ☐
I am moderately anxious or depressed ☐
I am severely anxious or depressed ☐
I am extremely anxious or depressed ☐

11. EQ-5D-5L

- We would like to know how good or bad your health is TODAY.
- This scale is numbered from 0 to 100.
- 100 means the best health you can imagine.
  0 means the worst health you can imagine.
- Mark an X on the scale to indicate how your health is TODAY.
- Now, please write the number you marked on the scale in the box below.

YOUR HEALTH TODAY = ☐



12. Motivation PMQOA

	Not at all important	Somewhat important	Very Important
1. I like to exercise or play sport to keep healthy.			
2. I like to get exercise			
3. I like the activity			
4. I want to be physically fit.			
5. I like to exercise/play sport to keep my joints mobile.			
6. I want to improve my fitness.			
7. I like to exercise / play sport relaxation.			
8. I want to stay in shape			
9. I like the company.			
10. I like to have fun.			
11. I like to get out of the house.			
12. I want to be with my friends.			
13. I like to have something to do			
14. I like the social aspects			
15. I like to exercise/play sport to want to exercise/play sport for medical reasons.			
16. I like to exercise/play sport to prevent/assist back pain.			
17. I like the challenge			
18. I like being part of a group			
19. I like to do something I am good at			
20. I like the rewards			
21. I like to meet new friends.			
22. I like the excitement.			
23. I want to release tension			
24. My family and friends want me to exercise/play sport			
25. I like to exercise/play sport to alleviate pain.			
26. I want to learn new things.			
27. I like to feel important.			
28. I want to get rid of energy.			
29. I want to be popular.			
30. I want to be noticed for what I do			
31. I train to go the championships			
32. The competition motivates to training			